

SITE 300

Fact Sheet Number Two

September 1994

This fact sheet updates the community on the continuing environmental investigations and cleanup at Lawrence Livermore National Laboratory's (LLNL) Site 300. Site 300 is an 11-square mile test facility located on Corral Hollow Road, about 8 miles from Tracy and 15 miles from Livermore. (Figure 1 shows the location of the site.) It is operated by the University of California for the U.S. Department of Energy (DOE). Site 300 is used primarily to process, assemble, and test explosive components. Nuclear weapons have not been and are not currently tested at Site 300.

Site 300 was added to the federal Superfund list in August 1990. LLNL/DOE is working on environmental restoration projects to address contaminated soil and ground water in certain areas of Site 300. LLNL/DOE's efforts are being performed under federal Superfund guidance, National Environmental Policy Act regulations, appropriate State regulations, and the U.S. Department of Energy's Environmental Restoration Program.

Site-Wide Remedial Investigation Report Finalized

An early step in the environmental cleanup process is a detailed investigation to identify the kinds of contamination present at a site, where contamination is located, and what the levels of that contamination are. LLNL/DOE prepared a Site-Wide Remedial Investigation (SWRI) report and submitted the final version to the regulatory agencies on April 27, 1994. Regulatory agencies that reviewed and commented on the report include the U.S. Environmental Protection Agency, the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board. The report (a massive 15 volumes) summarizes what LLNL/DOE has found over 10 years of investigations and analyses of soil, rock, soil vapor, ground water, and surface water samples. In general, the report says the contamination discovered at Site 300 is made up mostly of volatile organic compounds (VOCs) in soil and ground water that came from solvents used on site. In addition, there is some contamination with explosive compounds, depleted uranium, and tritium, a low-level radioactive form of hydrogen. Figure 2 shows the areas of ground water contamination.

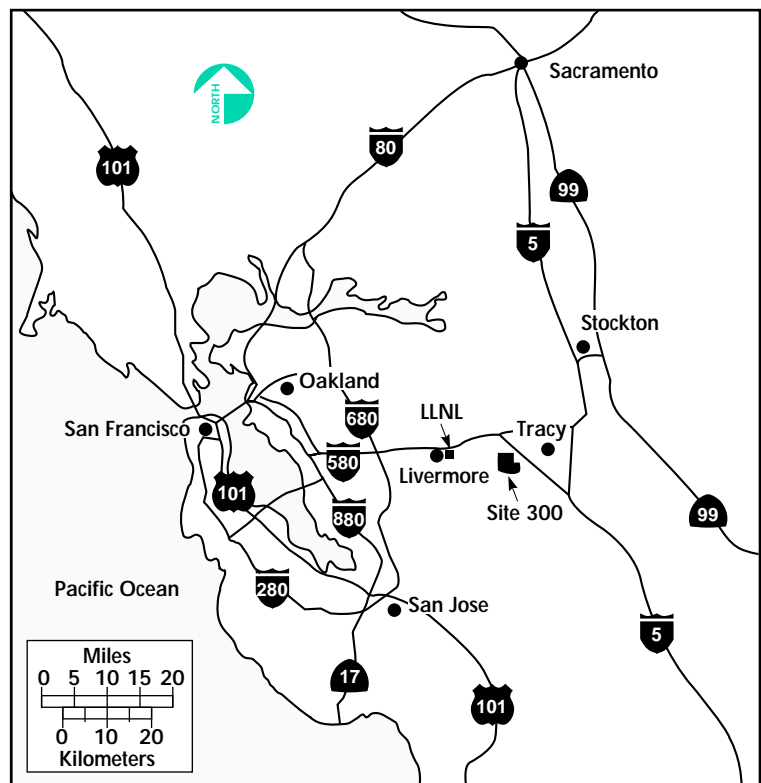


Figure 1. Site 300 location map.

Some of the VOC contamination has traveled off-site to the south and east in shallow ground water. LLNL/DOE has already started cleanup in these areas to remove these contaminants and prevent their further movement. LLNL/DOE will continue to monitor off-site areas throughout the life of the project.

A copy of the SWRI is available for the public to review at the Site 300 information repositories shown on the back of this fact sheet.

Human Health Risk Assessment and Ecological Studies Completed

As part of the SWRI, LLNL/DOE completed a human health risk assessment to analyze the potential health effects of the contamination found at Site 300. LLNL/DOE staff used sophisticated models to project what the maximum possible exposure to contaminants could be for workers at Site 300 and for current and potential future residents living next to the site. The assumptions used in a risk assessment are generally

conservative, meaning that they predict the highest health risks that in theory could result from the contamination. Actual health risks from the contamination would most likely be lower than the risks identified in the assessment.

Hypothetical risks to workers were identified for four localized areas. These four areas are within the Building 834, Building 833, Pit 6, and East and West Firing Area study areas. No workers are assigned to these areas on a full-time basis. The potentially harmful health effects would result from inhalation of volatile organic compounds that are present in building air or outdoor air near contaminated springs. These vapors dissipate rapidly in air and pose no long-term health threat to workers elsewhere on the site.

For current and future residents, the only potential risks identified by the risk assessment would be associated with exposure to contaminated ground water that would move over time from former dry wells next to Building 875 in the General Services Area to off-site areas. The risk assessment

assumed that residential water supply wells would be drilled at the Site 300 boundary closest to the contaminated dry wells. That land is open range land and there are no plans to put homes or drinking water wells in the area. Currently, no residents near Site 300 are exposed to ground water contaminants. Public health is not threatened by contamination at Site 300 at this time.

LLNL/DOE scientists also finished an ecological assessment to look at how the contamination might affect plants and animals. Site contamination is not expected to cause a decline in wildlife populations presently living on the site. Some localized areas of VOC contamination in soil could hypothetically pose a hazard to burrowing animals and small areas of metal contamination in surface soil could hypothetically pose a hazard to grazing deer.

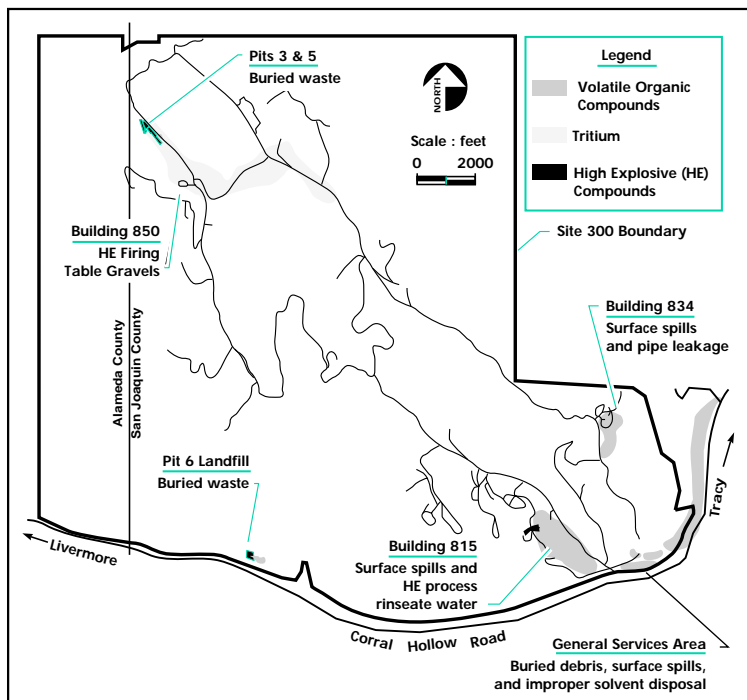


Figure 2. Sources and Locations of Contaminants in Ground Water at LLNL Site 300 and Offsite Areas.

Updated Schedule for Reports

Table 1 shows the new schedule for the investigation and cleanup process by Operable Unit; the deadlines for submitting reports to the regulatory agencies; and approximate dates for public meetings. The regulatory agencies and LLNL/DOE reviewed the schedule and agreed to change it to reflect the need for additional field work described below.

Now that the SWRI has been completed, the next step in the cleanup process will include preparation of separate Feasibility Study (FS) documents for each Operable Unit. An FS that identifies and evaluates cleanup options will be prepared for each Operable Unit.

The final FS for the Building 834 Operable Unit (OU-2) was accepted by the regulatory agencies on July 20, 1994, and the draft FS for the Pit 6 Operable Unit (OU-3) was submitted to them for their review on June 24, 1994. Copies of all FS documents will be included in the information repositories so the public can review them. Following submittal of an FS document, LLNL/DOE will issue a Proposed Plan for cleanup of that Operable Unit. A Proposed Plan fact sheet will be mailed to the Site 300 mailing list (if you would like to be put on the mailing list, please see the back page for how to do so). The public will then have an opportunity to review the Proposed Plan and provide formal comments to the regulatory agencies before a final decision on cleanup is issued.

Table 1. Submittal dates for Primary Documents.

Operable Unit (OU)	Character-ization Plan	Draft FS	Draft Final FS	Draft PP	Draft Final PP	Target Public Meeting Date	Draft ROD	Draft Final ROD
GSA (OU-1)	* 12/15/93	5/1/95	9/15/95	12/1/95	2/15/96	6/1/96	7/15/96	12/1/96
Building 834 (OU-2)	None	* 2/1/94	* 6/15/94	8/31/94	11/15/94	2/14/95	3/31/95	8/14/95
Pit 6 (OU-3)	None	* 6/30/94	11/15/94	7/30/95	10/15/95	12/15/95	4/15/96	9/1/96
HE Process Area Building 815 (OU-4)	* 2/15/94	12/1/95	4/15/96	7/1/96	9/15/96	11/15/96	2/15/97	7/1/97
Building 850/Pits 3&5 (OU-5)	None	6/15/95	11/1/95	1/15/96	4/1/96	6/1/96	9/1/96	1/15/97
Building 832 Canyon (OU-6)	* 3/30/94	Characterization work underway, subject to available funds and resources. Schedule for any additional documents will be submitted by 1/15/95.						
Sitewide Monitoring (OU-7)	To be incorporated into the sitewide ROD.							
Characterization Plan Unassigned Sites: Bldgs 854, 812, and the Sandia Test Facility	5/15/94. Completion is subject to available funds and resources. Schedule for field work to be submitted by 1/15/95.							
Sitewide ROD	Completion is subject to available funds and resources. Schedule to be submitted by 1/15/95.							

* = Submitted FS = Feasibility Study PP = Proposed Plan ROD = Record of Decision

General Services Area (GSA) Operable Unit (OU-1)

Operable Unit addresses environmental contamination resulting from past solvent disposal in the area, causing VOC contamination of soil, bedrock, and ground water. Two primary ground water plumes have been identified, both extending offsite. CERCLA removal actions are ongoing to remediate both plumes, and two water-supply wells have been sealed to prevent vertical contaminant migration. Further characterization is being conducted.

Building 834 Operable Unit (OU-2)

Operable Unit addresses environmental contamination from chemical releases at the core of the Building 834 Complex. Past spills of TCE, which was used as a heat exchange fluid, have resulted in VOC (primarily TCE) contamination of soil, bedrock, and ground water in the perched water-bearing zone. Minor tetra 2-ethylbutylorthosilicate (T-BOS) and diesel fuel contamination are also present. Interimsoil vapor and ground water extraction are ongoing as a CERCLA removal action.

Pit 6 Operable Unit (OU-3)

Operable Unit addresses environmental contamination from chemicals released from the pit 6 waste burial trenches, which were used in the past to dispose of material from Lawrence Berkeley Laboratory and LLNL Main Site. Although a variety of wastes were buried at pit 6, only VOCs have migrated beyond the pit boundaries. No remedial actions have been conducted except for surface drains and placement of a compacted native soil cover.

HE Process Area Building 815 Operable Unit (OU-4)

Operable Unit addresses environmental contamination from past TCE spills in the Building 815 area, where this solvent was used to clean scale from boilers. Low concentrations of the high explosive compounds RDX and HMX are also present. Interim remedial actions include the sealing/abandonment of two water-supply wells. Further characterization is planned for FY94-95.

Building 850/Pits 3 & 5 Operable Unit (OU-5)

Operable Unit addresses environmental contamination emanating from landfill pits 3 and 5, and from the Building 850 firing table. Tritium is the primary contaminant in ground water, although TCE is also present downgradient of pit 5. Interim remedial actions include removal of the firing table gravels and placement of a compacted native soil cover on pits 3 and 5.

Building 832 Canyon Operable Unit (OU-6)

The Building 832 Canyon Operable Unit addresses TCE contamination detected in spring 3. TCE has been used at several facilities in the area, primarily as a heat exchange fluid. Field activities are planned for FY95, and will include source investigations at Building 830, 831, and 832.

Sitewide Monitoring Operable Unit (OU-7) (not shown)

The Sitewide Monitoring Operable Unit includes sites where minor releases may have occurred, but no unacceptable risks to human health or the environment are present. This OU includes surveillance monitoring of Site 300 and offsite water-supply and monitor wells not included as part of other Operable Units.

Unassigned Sites are defined as areas where source screening indicates that releases may have occurred, but further investigation is required to determine if risk to human health or the environment is present. Currently unassigned sites include the former Sandia Test Facility, and Buildings 812, 823, 829, 840, 841 and 854.

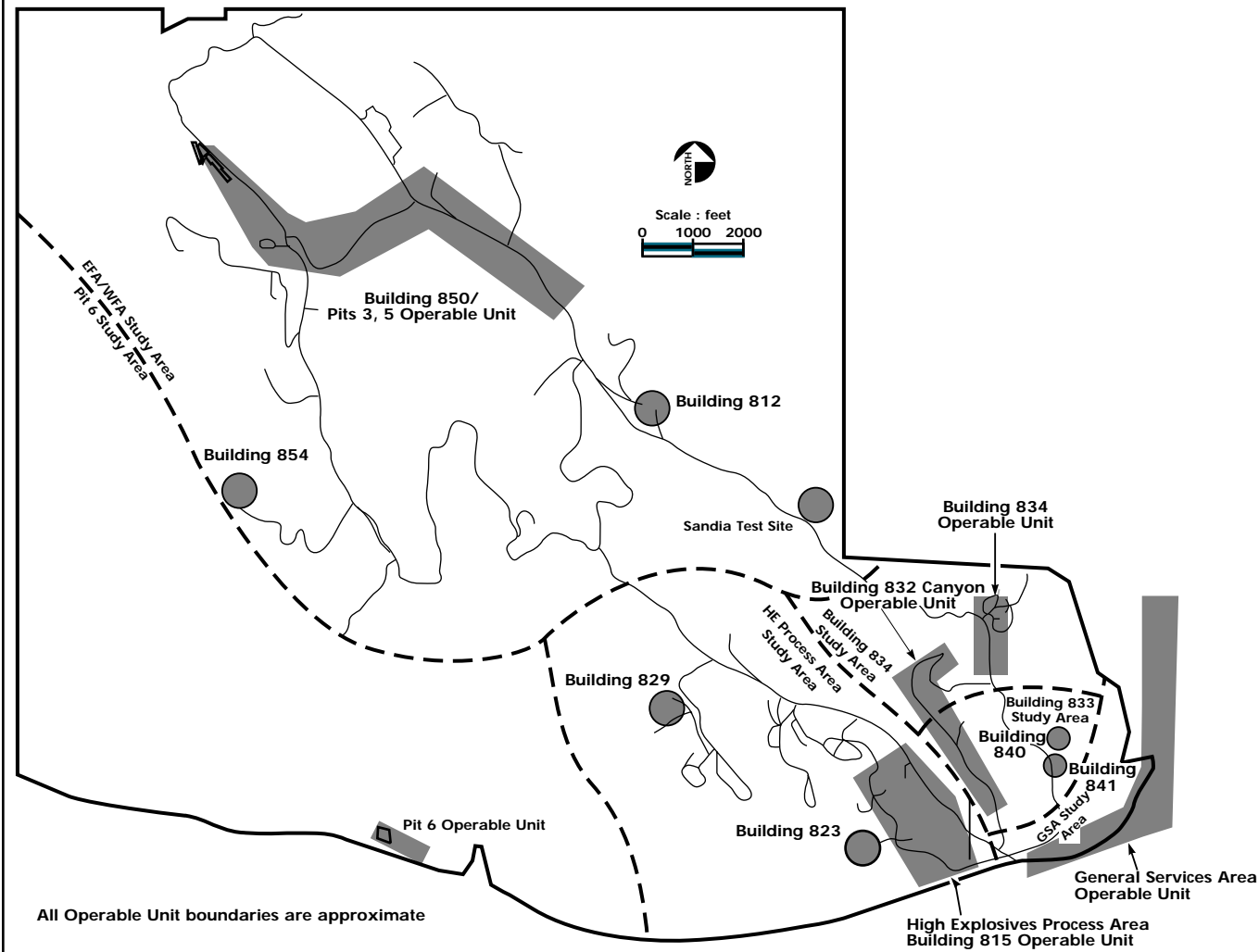
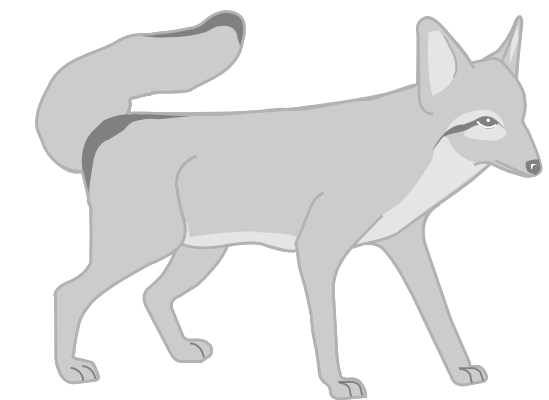


Figure 3. Operable Units, SWRI Study Areas, and Unassigned Sites at LLNL Site 300.

Study Areas, Operable Units, and Unassigned Sites Defined

For the purposes of the SWRI investigations, LLNL/DOE divided Site 300 into six separate geographical units called study areas. The study areas correspond to specific activities that are conducted at the site. LLNL/DOE has redefined six distinct "Operable Units" within the study areas as a result of the SWRI findings. The Operable Units correspond to specific areas of contamination that must be evaluated for potential cleanup during the next phase of the environmental restoration project. In addition, LLNL/DOE has defined an overall Sitewide Monitoring Operable Unit, comprising locations where no (or minor) releases have occurred, and where the health risk assessment indicated that no unacceptable risks to human health or the environment are present. Although no actions are being considered for the Sitewide Operable Unit, LLNL/DOE will continue to monitor the area.

Also identified are seven other areas classified as "Unassigned Sites." These are sites for which additional information is needed before LLNL/DOE can determine whether or not they are contaminated. Figure 3 describes the Operable Units and shows how the Study Areas, Operable Units, and Unassigned Sites relate to one another.



Cleanup Progress

During LLNL/DOE's investigations, interim cleanup activities have been and continue to be carried out in areas where LLNL/DOE and the agencies agreed cleanup could and should proceed without delay. These activities include the following, and are shown on Figure 4:

- Operating two ground water treatment systems at the Eastern and Central General Services Area. These systems are being used to treat ground water containing volatile organic compounds (from solvents). Thus far, the two systems have successfully treated more than 36 million gallons of ground water to acceptable regulatory levels.
- Operating treatment systems to remove VOCs from soil and ground water at Building 834. The systems began operating in Spring 1994 and are undergoing final adjustments prior to beginning full-scale operation.
- Closing two former landfills. Pits 1 and 7, which received debris from

experiments at Site 300, have been covered with a thick cap of clay and other materials to prevent water from getting into the pits and allowing chemicals to move through the soil. The closures were completed in February 1993. LLNL/DOE continues to monitor the area.

- Removing gravels at six explosives testing areas. The gravels contained tritium, metals, and debris and were disposed of in Pit 7 (prior to closure).
- Using bioremediation to treat soils contaminated with petroleum products. LLNL/DOE excavated about 100 cubic yards of soils containing oil and grease to treat them using bacteria which break down the chemicals into non-hazardous components. By bioremediating the soil, LLNL/DOE avoids putting it in landfills and reduces the potential for future ground water contamination. This summer, LLNL/DOE conducted bioremediation of an additional 140 cubic yards of soils contaminated with diesel fuel.

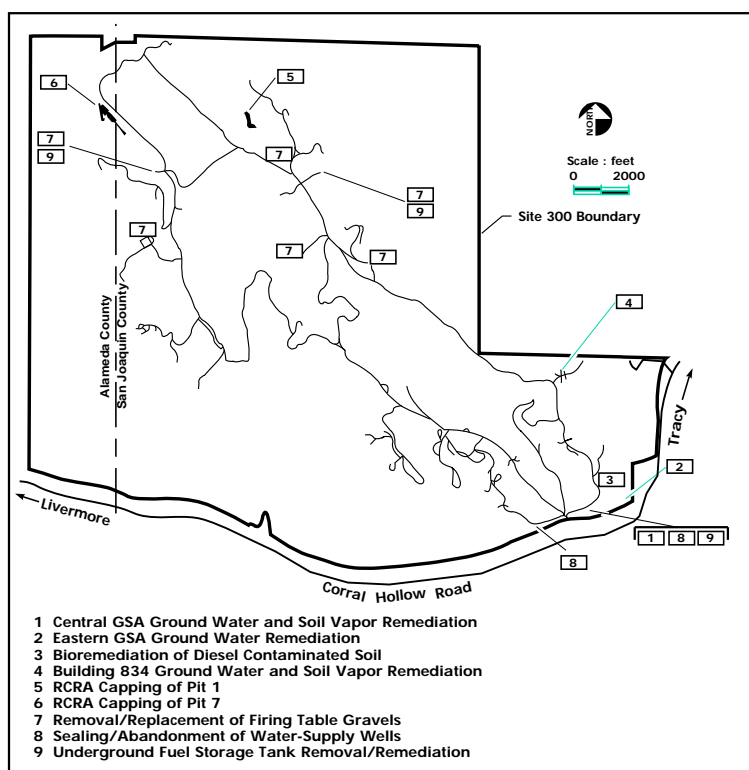
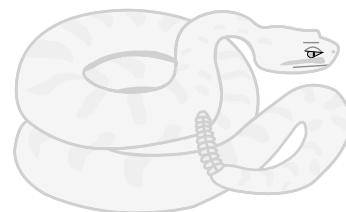


Figure 4. Selected Interim Cleanup Activities at LLNL Site 300.

- Removing underground storage tanks. LLNL/DOE has removed underground storage tanks at Buildings 801, 850, and 874 as well as soils contaminated with petroleum products as a result of leaks from the tanks.
- Closing former wells. LLNL/DOE has closed eight former water-supply wells at Site 300. They were closed because LLNL/DOE believed that these older wells could potentially serve as pathways for the movement of contaminants from shallow ground water to deeper ground water.



Upcoming Environmental Restoration Activities

Uranium Investigation at Building 850/Pits 3 & 5 Operable Unit

During the course of routine investigations at Site 300, LLNL/DOE discovered uranium in several ground water samples that is above the Maximum Contaminant Level set by state and federal regulations. When uranium is processed, the uranium isotope used in weapons (U-235) is separated and removed from the other uranium isotopes (primarily U-238). This remaining uranium is called depleted uranium and is much less radioactive than the U-235, giving off radiation that cannot harm the body unless it is ingested or inhaled. Depleted uranium was used at Site 300 to approximate the size and weight of materials in tests on mock explosive devices. The tests left depleted uranium in the gravels and soils at test locations and in the landfills used for disposal of test debris.

LLNL/DOE has begun investigations to determine the impact of depleted uranium on the Site 300 environment. This includes an investigation to determine background levels of naturally occurring uranium in soil and ground water; analyses of ground water, soil, and rock for uranium isotopes; surface soil sampling; an analysis of the potential for transport of the uranium through wind, rain, and other natural processes; and a health risk assessment to determine the potential effect of any uranium contamination on living things (for example, through inhalation of airborne dust). The uranium investigation must be completed before a feasibility study for cleanup at the Building 850/Pits 3 & 5 Operable Unit can be submitted to the regulatory agencies.

Additional Characterization Work at GSA, HE Process Area

The regulatory agencies have asked LLNL/DOE to do some additional investigations at the General Services Area (GSA) and the High Explosives (HE) Process Area. At the GSA, LLNL/DOE installed 13 new monitor wells to provide more information about volatile organic compounds in

ground water. LLNL/DOE has discovered that there are two areas containing very low levels of trichloroethylene in the deep ground water zone. Contamination appears to have resulted from downward movement of VOCs from the shallow ground water into the bedrock. Although the deep ground water zone is a source of water for Site 300 and nearby off-site areas, no contamination has been found in water supply wells on or off site. The contamination was found only in monitor wells that are used solely for testing water quality.

In the HE Process Area, LLNL/DOE is continuing investigations at the Building 815 Operable Unit to define the extent of VOC contamination in ground water more accurately. LLNL/DOE will drill a cluster of new monitor wells and sample them to define the southernmost edge of the VOC plume.

New Publications Available in the Information Repositories

New documents have been added to the information repositories recently:

- Monthly, Quarterly, and Annual Monitoring Reports for the Eastern and Central GSA activities.
- Draft Feasibility Study Characterization Plans for the GSA, HE Process Area, Building 854, Building 832, and Unassigned Sites.
- Feasibility Studies for Building 834 (Draft Final) and Pit 6 (Draft).
- Final Site-Wide Remedial Investigation Report.

All of these documents are available in the Tracy Library and LLNL Visitors Center repositories. The Stockton Library auxiliary repository will be updated to include an Executive Summary of the SWRI, final Feasibility Study documents, and copies of all fact sheets, newsletters and other community correspondence only. Please note that the repositories will be reorganized slightly to correspond with the new Operable Units LLNL/DOE has defined.

For More Information

As the environmental restoration program progresses at Site 300, LLNL will keep you informed of events in update fact sheets. If you have comments, questions, or wish to be added to the mailing list to receive future information about Site 300, please contact:

Bert Heffner
Environmental Communications
Manager, Area Relations
LLNL, P.O. Box 808, L-790
Livermore, CA 94551
(510) 424-4026



If you would like more detailed information about the site, visit an information repository for Site 300 information and technical documents:

LLNL Visitors Center*
(located at the LLNL main site)
Enter from Greenville Road
Livermore, CA 94551
For information call
(510) 422-9797
Hours: Mon., Tues.,
Thurs., Fri. 10 am -- 4:30 pm
Wed. 12:30 pm -- 4:30 pm
Closed weekends and Laboratory
holidays.

** This location contains the Administrative Record for Site 300, which includes all documents and correspondence related to the environmental cleanup. The Administrative Record is stored on microfiche.*

Tracy Public Library
20 E. Eaton Avenue
Tracy, CA 95376
(209) 835-2221
Hours: Mon. 1
pm - 8 pm
Tues. 10 am - 5 pm
Thurs. 2 pm - 6 pm
Sat. 12 pm - 5 pm
Closed on Wed., Fri., and Sun.

Stockton Public Library
605 North El Dorado Street
Stockton, CA 95202
(209) 937-8221
Hours: Mon./Wed./Thurs. 10 am - 9 pm
Tues./Fri. 10 am - 6 pm
Sat. 10 am - 5 pm
Closed on Sun. and on the second Wed.
of every month.

NOTE: *Stockton is an auxiliary repository and does not contain all documents. Documents available at Stockton include the Executive Summary of the SWRI, complete final Feasibility Study documents, and all public information pieces.*



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